FAUQUIER COUNTY GOVERNMENT AND PUBLIC SCHOOLS
***Procurement Division***
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March 24, 2005

**ADDENDUM NO. 2** TO ALL BIDDERS: *25 pg. Addendum, 4 pg. 8 ½ X 11 dwg., 8 pgs. 30 X 42" dwgs.*
Reference – Invitation for Bids: IFB# 70-05sm/PHRA Project 11568-1-0
Title: Northern Area Community Park & Sports Complex
Dated: February 24, 2005
Bid Due: April 14, 2005, 3:30 P.M.

The following revisions have been made to the original Invitation for Bids referenced above.

**Revisions to Price Breakdown Schedule**

Table 2.1 has been revised to add items #13A, 14A, 15A, and 16A . Subsurface drainage bids shall be broken-down on the Price Breakdown Schedule under these items.

**Revisions to Design of Subsurface Drainage System:**

The design of the subsurface drainage system for the athletic fields will be revised. The drainage will consist of cloth-wrapped polyethylene structures approximately one inch wide by 4"-6" deep that will be installed in narrower, shallower trenches. Details and drainage layout will be provided in Addendum # 3.

**Revisions to Plan Sheets:**

The following is a list of revisions that have been incorporated into the Contract Documents. All items have been clouded on the plans with Delta 2.

1. Sheet C00-Revisions to Sheet Index
    a. Revised sheet number for sheet C-01
    b. Added Water Treatment Plant sheets WP-01 to WP-03
    c. Revised sheet title for sheet L-02

2. Sheet C-08
    a. Revised waterline location at entry building area to avoid proposed pole light.

3. Added Water Treatment Plant sheets WP-01 to WP-03

4. Sheet L-02
    a. Added trash receptacle locations.

b. Added chain link fence
c. Revised sheet title

5. Sheet L-06 (8 1/2 " x 11" page)
    a. Added note concerning approval of entry sign location by Owner's Representative prior to construction

6. Sheet L-08 (8 1/2 " x 11" page)
    a. Revised guardrail section detail

7. Sheet L-12 (8 1/2 " x 11" page)
    a. Added trash receptacle at playground #2.

8. Sheet L-18 (8 1/2 " x 11" page)
    a. Revised landscaping near Entry Building due to addition of pole light and to avoid conflict with utilities

9. Sheet LT-01
    a. Revised the location of the pole light that is near the major playground
    b. Added pole light at the amphitheater gate
    c. Added pole light near the Entry Building

10. Sheet E101
    a. Revised the electric location at entrance sign.

**Revisions to Specifications:**

1. Revised *Section 02870 Site Furnishings and Athletic Equipment* to revise specification for and quantity of trash receptacles
2. Added *Section 13300 Water Treatment System.*

All other specifications, terms and conditions remain unchanged.

*Bidders shall acknowledge Addendum #2 where indicated on the bottom of Page 15, Bid Form, when they submit their bid.*

Susan R. Monaco, CPPB
Procurement Supervisor

SECTION 02870

# SITE FURNISHINGS & ATHLETIC EQUIPMENT

**ADDENDUM 2- 03/18/05:**

The following section has been revised:

PART 2-PRODUCTS

2.1 .Site Furnishings

B. Trash Receptacles- product specification and quantity have been revised, locations have been added

## PART 1-GENERAL

1.1 SUMMARY

A. Provide all site furnishings as shown on the drawings or inferable therefrom, and/or as specified in accordance with the requirements of the Contract Documents.

B. The work of this section includes installation of:
1. Benches
2. Picnic Tables
3. Bike Racks
4. Trash receptacles
5. Grills
6. Disc Golf Targets
7. Scoreboards
8. Bleachers
9. Team Benches
10. Volleyball Equipment
11. Football and Soccer Goals, Foul Poles, and Equipment
12. Baseball and Softball Equipment

1.2 SUBMITTALS

A. Product Data:
1. Provide manufacturer's data for all items listed in section 1.1B above.

B. Shop Drawings: Provide shop drawings indicating pertinent dimensioning, layout jointing, manufacturers recommendation for mechanical anchoring, construction detailing for:

1. Volleyball Equipment
2. Football and Soccer Goals and Foul Poles
3. Baseball and Softball
4. Team Benches

C. All exposed metal elements of benches, picnic tables, trash receptacles, and bike racks site furnishings shall have a black finish.

1.3 QUALITY ASSURANCE

A. All furnishings to be supplied with manufacturers' standard warranties. One year shall be the minimum warranty period.

B. Installer Qualifications: An experienced installer who has completed product installations similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1.4 DELIVERY, STORAGE AND HANDLING

A. Delivery: Schedule operations to avoid unnecessary handling. Deliver products to the project site on pallets constructed with non-staining and non-discoloring materials. Stack material off the ground and protect from damage and soiling.

B. Storage: Store in accordance with manufacturer's recommendations. Protect products during storage and construction against damage. Cover products with plastic or use other packaging materials to protect from elements or construction damage

C. Handling: Avoid chipping, scratching, or other damage to furnishings. Restore or replace damaged items.

1.5 PROJECT CONDITIONS

A. Installer must examine all parts of the supporting structures and the conditions under which furnishings will be installed. All unsatisfactory conditions must be corrected before proceeding with installation.

**PART 2- MANUFACTURERS**

2.1 MANUFACTURERS

A. Bench and Picnic Table Manufacturer: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Victor Stanley, Inc., Dunkirk, MD (800) 368-2573 www.victorstanley.com

B. Manufacturer for bike rack: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: DERO Bike Rack Company (www.dero.com) 888-337-6729, Dero Hoop Rack

C. Manufacturer for trash receptacles: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Belson (www.belson.com)

D. Manufacturer for Grills: RJ Thomas (www.pilotrock.com)

E. Manufacturer for disc golf targets: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Innova Disc Golf (www.innovadiscs.com) 1-800-476-3968

F. Manufacturer for Scoreboards for baseball and softball fields: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Sportable Scoreboards 1-800-323-7745 (www.sportablescoreboards.com)

G. Manufacturer for bleachers, team benches, and volleyball equipment: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Patterson-Williams Athletic (www.pwathletic.com)

H. Manufacturer for football goals and equipment, and baseball equipment, and soccer goal and equipment: Subject to compliance with requirements, provide products by the following manufacturer or other manufacturer approved by owners representative: Anthem Sports (www.anthem-sports.com)

**PART 2-PRODUCTS**

2.1 SITE FURNISHINGS: All furnishings and equipment shall be provided as follows, or contractor may submit equivalent products for approval by Owners Representative prior to ordering .

A. Benches: Shall be Victor Stanley, Parson's series P-8 (with back), , and P-4 (backless) (1) required ,or approved equal. Ipe wood 3" x 4" slats, all metal surfaces black powdercoat finish. twelve (12) benches with back and one (1) backless bench (at entry building) required.

B. Trash Receptacles: Shall be Belson, CRS 34-1, or approved equal. 18" diam. X 35" ht., 34 gal., or approved equal., black finish. Each shall have dome top, R30DC, black finish. Forty (40) trash receptacles required. Trash receptacles shall be located on site as follows:

| | Quantity | |
|---|---|---|
| Lake Pavilion: | 2 | (one at deck , one at front walk) |
| Large Pavilion | 2 | (at front entry walk) |
| Major Pavilion | 2 | (at front entry walk) |
| 1st Small Pavilion | 1 | (at front entry walk) |
| 2nd Small Pavilion | 1 | (at front entry walk) |
| Concession 1(West) | 3 | |
| Concession 2 (East) | 2 | |
| Ballfield Shelter1 | 1 | |
| Ballfield Shelter2 | 1 | |
| Amphitheater Gate | 1 | |
| Softball 1 | 2 | (at 1st and 3rd baselines, adjacent to bleachers) |
| Softball 2 | 2 | (at 1st and 3rd baselines, adjacent to bleachers) |
| Baseball 1 | 2 | (at 1st and 3rd baselines, adjacent to bleachers) |
| Baseball 2 | 2 | (at 1st and 3rd baselines, adjacent to bleachers) |
| Football Fields | 3 | (behind overrun area, at 50 yard line) |
| Playgrounds | 4 | (one at each, per plan) |
| Soccer 1 | 2 | (behind overrun area, at center of sides) |
| Soccer 2 | 2 | (behind overrun area, at center of west side of field) |
| Throughout site | 5 | (per overall plan L-01) |
| Total | 40 | |

C. Bike Racks: Shall be Dero Bike Rack Company, DERO Hoop Rack, Powdercoat Black finish, embedment mount, or approved equal.

D. Picnic Tables: Shall be Victor Stanley Parsons P-1 (not anchored) or approved equal. Ipe wood 3" x 4" slats, all metal surfaces black powdercoat finish. Picnic Tables shall be 6' in length. ADA accessible tables shall have 8' table tops (centered) with 6' seats, mounted on metal frame for 6' tables. A total of ninety-seven (97) tables are required, including eighty-five (85) 6' tables, and twelve (12) ADA accessible tables. Picnic tables shall not be anchored or permanently installed. Picnic tables shall be located on site as follows:

| | 6' | ADA | Total |
|---|---|---|---|
| Lake Pavilion: | 18 | 2 | 20 |
| Large Pavilion | 19 | 2 | 21 |
| Major Pavilion | 22 | 2 | 24 |
| 1st Small Pavilion | 5 | 1 | 6 |
| 2nd Small Pavilion | 5 | 1 | 6 |
| Concession 1 | 4 | 1 | 5 |
| Concession 2 | 4 | 1 | 5 |
| Throughout site | 8 | 2 | 10 |
| Total | 85 | 12 | 97 |

E. Grills: Shall be R.J. Thomas-small A-20-B2, Large D-248/SS B-2 or approved equal. Provide a total of 6 large grills, and 7 small grills. These shall be located in order to install 2 large at the major pavilion, 2 large at the large pavilion, 2 large at the lake pavilion, 1 small at each of the two small picnic pavilions, and five small grills near individual picnic tables.

F. Disc Golf Targets: Shall be Innova Disc Golf PRO Model DISCatcher, permanent configuration, with locking installation sleeve. Eighteen (18) required.

G. Scoreboard for baseball/ softball: Sportable Scoreboards Model 3308LED, color black, LED display. Provide remote control. Four(4) required, with one (1) per ball field

H. Team Benches: Shall be PW Athletic, model, 1103-15 round surface mount to concrete paving (M3) with split designer plate cover for surface mount (DC2) or approved equal.

I. Bleachers: Shall be Patterson-Williams Athletic, model 1173-21, or approved equal. 3 high, 21' length w/ wide planks at bottom, optional wheels, black powdercoat frame, anodized aluminum seats and floor boards. A total of eight is required, with two (2) per ball field.

J. Volleyball Equipment: Shall be Patterson-Williams Athletic, model 8307, 3/ 4" Boundary marker Rope, (included Model 8372 set of four Stakes) or approved equal. Two required, One (1) of each per court.

K. Volleyball Poles: Shall be Patterson-Williams Athletic, model 2219-21 One (1) pair of 5" square poles with net tightener with removable handle, side pulley, I fixed eye w/ rope clamp. Black power coat finish (include post extension for sand volleyball court) and ground sleeves model or approved equal. One pair per court

L. Volleyball Net: Shall be Patterson-Williams Athletic, model 8362-20 3mm nylon mesh (5" x 7" size), Headband is 2" white PVC tarp binding are 1" white PVC tarp, top and bottom rope model. or approved equal. Two required, one (1) per court.

M. Soccer Goals: Shall be Anthem sports, model AE11-153 (Per Pair), four goals required. Interscholastic Goal by KwikGoal, model 2B10, or approved equal. 8'H x 24'W x 3"S x 8'B, 4"Wx 2"D uprights and crossbars, alum with white power coat finish. Includes four ground anchors and "Kwik lock" net clips. Also, Anthem # AE11-

153 ground X-Bar Two required per field, and Model AE11-705, One set includes: four semi-permanent ground Anchors. One set per goal required.

N. Soccer Field Marking System: Shall be Anthem Sports, model AE11-347 or approved equal. Set includes: 25 black nylon locators, starting tool, and 600' cord. One (1) set per field.

O. Soccer Net: Shall be Anthem Sports, model AE11-528 or approved equal. The size is 8'x24'x4'x10' with 5.5" square mesh, 4mm thick, Braided blue in color. Four required, two (2) per soccer field and two (2) per football field.

P. Soccer Corner Flags: Shall be Anthem Sports, model AE11-723, or approved equal. Set includes four, 60"H x1"O.D. flags with spring loaded base. Four sets required, (1) per soccer and one (1) per football field.

Q. Football Goals: Shall be Anthem Sports, model AE47-172 (Per Pair) Combination Soccer football goals, or approved equal. Soccer Goal Dimensions are 8'H x 24'W x 3"S x 8'B, 4"W x 2"D rectangular steel tubing uprights and crossbars, Top football goal are 20'H x 2-3/8" O.D. steel with white power coat finish. Removable soccer backstays are 1-5/16" O.D. galvanized steel. Included "money clip" style net attachment. Set includes four ground anchors and "Kwik lock" net clips. Also required are Anthem model AE47-173 Semi-permanent Ground Sleeves (set of four) Two sets required per field.

R. 90' Ball Field Bases: Shall be Anthem Sports, model AE33-242, or approved equal. by Schutt Sports, Jack Corbett pro style bases, Set includes: three bases, three anchors and three rubber plugs. One set required for baseball field #2 .

S. 60' Ball Field Bases: Shall be Anthem Sports, model AE33-241, or approved equal. By Schutt Sports, Hollywood Impact bases, Set includes: three bases, three anchors and three rubber plugs. . Three sets required, One (1) for base ball field #1 and two (2) for softball fields #1 and 2.

T. 90' Ball Field Pitching Rubbers: Shall be Anthem Sports, model AE33-203, or approved equal. 24" movable pitching rubber, Set includes: ground anchor and rubber plugs. One sets required, base ball field #2.

U. 60" Ball Field Pitching Rubbers: Shall be Anthem Sports, model AE33-204, or approved equal. 18" movable pitching rubber, The set includes: ground anchor and rubber plugs . Three sets required, one (1)set for base ball field #1 and two (2) sets for softball fields #1 and2.

V. Home Bases: Shall be Anthem Sports, model AE33-221, or approved equal. Stanchion mounted steel plate with molded rubber construction, removable. The set includes: ground anchor. Four sets required one for each ball field.

W. Batting Cage Nets: Shall be Anthem Sports, model AE33-165, or approved equal. (12'x12'x70', 2 mm, #36 thread) Eight (8) required to cover top of batting cages.

X. Football Pylons: Shall be Anthem Sports, model A47-247, or approved equal. 4" square x 18" high pylon, vinyl-nylon over foam core, bright orange color. Set includes: spring mounted pylons, with ground stakes . two (2)sets required.

Y. Football Field Marking System: Shall be Anthem Sports model AE15-345 or approved equal. Includes 50 black nylon locators, starting tool, and 600' cord. Two sets required, one (1) set per field.

**PART 3-EXECUTION**

3.1 INSPECTION OF EXISTING CONDITIONS AND PRODUCTS

A. Verify that supporting construction is properly located and sized.

B. Commencement of site furnishings installation implies acceptance of existing conditions.

C. Do not install products that have been damaged during shipping, storage, or construction.-

3.2 INSTALLATION

A. Install in accordance with plans, mechanical specifications and manufacturer's recommendations. Contractor shall furnish all fasteners and equipment required for installation per construction documents and manufacturer recommendations.

3.3 ACCEPTANCE OF WORK

A. General: All damaged items under this section shall be replaced free of charge to the Owner.

B. Cleaning: Perform cleaning during installation of the work and upon completion of the work. No soil, trash, or debris will be allowed to accumulate on site.

C. Final acceptance of this item will be contingent upon inspection of the installed site furnishings by the Architect/Engineer.

END OF SECTION

**SECTION 13300**
**WATER TREATMENT SYSTEM**

## PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish and install all equipment necessary to provide a treatment system capable of treating raw well water at a rate of 15 gpm for the removal of iron and manganese and for pumping treated water into the distribution system to supply the park.

B. All required labor, materials and equipment shall be included.

1.2 QUALIFICATIONS OF EQUIPMENT SUPPLIER

A. The bidder shall offer new equipment from a U.S. manufacturer specializing in the design and fabrication of the equipment specified herein.

B. The equipment shown on the contract drawings and specified herein consists of:

1. General Filter Vertical Pressure Filter System
2. Goulds Booster Station and Diaphram Bladder Tank
3. Chemical Feed Systems
4. Goulds Well Pump and Accessories
5. Standby Power Generator

C. Alternate, as provided by other manufacturers, will be considered by the Engineer. The Owner's decision or judgment on these matters will be final, conclusive and binding.

1. Equipment which is offered as a substitute to the specific requirements of these Specifications and which differs in detail and arrangement from that shown may require changes in design and construction. All costs which result from such changes in design and construction are to be borne entirely and unconditionally by the Contractor; said costs to included but not be limited to structural, piping, mechanical and electrical changes and all engineering costs incurred as a result of the substitution, in the revision of Plans and Specifications, review of design changes by others, preparation of change orders, and any other costs directly resulting from said substitution.

2. Suppliers wishing to submit a substitution shall submit the following to the Engineer/Owner for consideration:

   a. Drawings, specifications, and product literature with adequate detail to determine that what is proposed will meet the requirements of the plans and specifications.

   b. A list of 5 installations of similar type and size with plant addresses and telephone numbers. The engineer and owner may contact these installation sites to determine experience.

   c. Evidence of manufacturing capability including a description of facilities, the number and professional qualifications of personnel, and quality control practices. The alternate equipment supplier shall identify major outside fabricators for the purpose of determining experience.

   d. Evidence of technical capability to design and check out the complete alternate system, including modifications which will be required in structures, foundations, and equipment provided by others.

   e. Evidence of financial responsibility adequate to complete the project and assure viability of equipment warranty.

   f. A complete listing of changes which will be required in the contract plans and specifications to accommodate the alternate equipment.

3. Alternate bidders shall guarantee, in writing, signed by an officer of the company, that the equipment offered will provide comparable or superior features, performance quality, and materials of construction as the equipment specified.

4. If after installation the alternate equipment does not perform in accordance with the specifications or other deficiencies are noted, the owner will require the modification or replacement of such equipment to meet the specifications at no additional expense.

1.3 SUBMITTALS

A. The bidder is required to furnish, for the approval of the Engineer and at no increase in contract price, 6 sets of complete specifications and construction drawings for all systems being supplied.

B. When approved, two sets of such prints and submittal information will be returned to the bidder, and these drawings will then govern for the work detailed thereon. The approval by the Engineer of the supplier's drawings shall be an approval relating only to their general conformity with the bidding drawings and specifications and shall not guarantee detail dimensions and quantities, which remains the bidder's responsibility.

C. The manufacturer's and installing contractor's standard published warranty shall be included with submittal information.

**PART 2 - PRODUCTS**

## 2.1 VERTICAL PRESSURE FILTER SYSTEM

A. Filter

1. The filter battery shall consist of 1 (one) complete vertical pressure filter, as manufactured by USFilter, Ames, IA, or approved equal.

2. The filter tank shall be 30" in diameter by 72" on the straight side. The filter tank shall be designed for a minimum working pressure of 125 psig. The vessel shall be constructed in accordance with ASME code requirements with ASME code stamp required.

3. The tank shall be equipped with the necessary flanges and connections for the main piping system. The top tank head shall be equipped with a 12" x 16" manhole. Each unit is to be supported on structural legs welded to the side shell. Each leg is to be provided with a suitable base plate and is to be neatly finished at the top.

B. Underdrains

1. Each filter bottom shall be equipped with a steel header-lateral underdrain system. It shall be perforated with openings on approximately 14" centers throughout. The openings shall be controlled with non-clogging stainless steel baffle plate underdrains secured to the laterals and fabricated from stainless steel. The design of the underdrain element shall be of a two-shrouded type, welded together. The stainless steel lower shroud shall have a stainless steel eye extending through the lateral and a stainless orifice located within the lateral to eliminate tuberculation around the orifice. The underdrains shall be so designed to reduce the water velocity, discharging the water horizontally without impeding its flow, thereby preventing channeling in the filter bed. The total orifice area shall not exceed 0.3% of the total filter area. The header and laterals shall be sized to provide uniform distribution of the backwash water. A concrete fill flush with top of the laterals shall be provided by the installer.

C. Supporting Beds

1. Each filter shall be provided with a 16" supporting bed consisting of the following graded layers of gravel.

| Layer & Depth | Passing Screen | Retained on Screen |
|---|---|---|
| Bottom 4" | 1 1/2" | 3/4" |
| Next 3" | 3/4" | 1/2" |
| Next 3" | 1/2" | 3/16" |
| Next 3" | 3/16" | 3/32” |
| Top 3" (sand) | 0.6 mm | 0.5 mm |

The gravel shall be free from clay, loam, dirt, calcareous, or other foreign material, and shall consist of round or angular particles being relatively free of flat or elongated particles. The gravel shall be shipped bagged and palletized.

D. Filter Media

1. The filter shall be provided with a 24" deep bed of best quality Manganese Greensand. The Manganese Greensand shall have an effective size of 0.30-0.35 mm, a uniformity coefficient not greater than 1.55 and shall be specifically processed and stabilized for continuous regeneration with potassium permanganate.

2. A 12" deep bed of 0.8-1.0 mm effective size anthracite with a uniformity coefficient no more than 1.5 shall be furnished on top of the Manganese Greensand bed.

E. Influent Distribution and Wash Water Collection

1. The method of introduction of raw water to the filter unit, or the collection of wash water from the unit shall be such that water is distributed to, or collected from, the entire filter bed in a uniform manner.

2. The distribution and collection system of the filter shall be arranged to accommodate backwashing at the maximum rate of 15 gallons per minute per square foot of filter surface.

3. The arrangement of the collection system shall provide for the proper backwashing of the filter beds without loss of filtering material. The distance from the surface of the bed to the wash water collector (freeboard) shall be not less than 50% of the depth of the filter bed.

F. Piping and Valves

1. The piping shall be arranged to carry out all the operations of filtering, backwashing, and filtering to waste. Filter unit piping shall be not less than 1" in size. Main battery connecting piping shall be 1" in size.

2. The filter equipment supplier shall supply butterfly type filter function valves. All valve bodies shall be monoflange for mounting between ANSI 125/150 flanges. Valves shall be designed for watertight control at the maximum actual working pressure. Disc material shall be corrosion resistant. Shafts shall be one piece solid stainless steel conforming in diameter to AWWA Class 75B Standards with corrosion resistant bearings. Seat material and shaft seals shall be EPDM.

3. The following pneumatically operated filter function valves shall be furnished by the filtration equipment manufacturer:

   a. 1 - size 1” influent valve
   b. 1 - size 2” backwash waste valve
   c. 1 - size 2” effluent valve
   d. 1 - size 1” filter to waste valve
   e. 1 - size 2” backwash rate set valve
   f. 1 - size 1” drain valve
   g. 1 - size 1” air wash valve

4. Each filter function valve shall be furnished with a pneumatic actuator suitable for an 80 psi cylinder air supply. The actuator shall be weatherproof and furnished with a corrosion resistant cover complete with sealing gaskets. Air supply connections shall be 1/4” diameter. Three way, 120 V, 60 Hz, single phase weatherproof solenoids shall be provided for air supply control to the valve cylinder. Rate of opening and closing speed control shall be provided for each valve. The valve and pneumatic actuator shall be furnished by one manufacturer and shall be shipped factory assembled.

5. All necessary air vents and relief valves shall be furnished.

G. Loss of Head Guages

1. The filter system shall be equipped with a General Filter #4879 gauge assembly to indicate loss of head. The assembly shall consist of two pressure gauges mounted on a cast aluminum nameplate mounting bracket and installed across the influent and effluent header piping.

H. Backwash Rate of Flow Indicator

1. Filter shall be equipped with a General Filter #1639 backwash rate of flow indicator complete with stainless steel open-end orifice, straightening vanes, air expansion chamber, a bourbon-type indicator gauge with phosphor bronze tube, brass socket, 4 1/2" aluminum alloy flangeless case, white dial with black numerals and graduations, plastic lens, and red stationary pointer hand set to indicate the correct flow rate during backwash of the filter, and gauge shut-off valve.

I. Fully Automatic Backwash Cycle Control

1. A control system shall be furnished to provide fully automatic air scour and water backwash of the filter vessel.

2. The automatic backwash cycle shall be initiated by loss of head with a differential pressure switch or manually with a pushbutton.

3. Control Features

a. Automatic (Filter selector turned to "AUTO"):
When the end point head loss is reached, it shall be sensed by a differential pressure switch, which will initiate the filter backwash cycle. (Each) (The) filter will then automatically proceed through air scour and water backwash and be returned to service in sequence.

b. Semi-automatic (Filter selector turned to "AUTO"):
To initiate backwashing manually, the control system shall be provided with an "AUTO BACKWASH-MANUAL START" push button, which can initiate the filter backwash cycle. The filter shall then proceed through the backwash cycle and return to service.

c. Manual or Off (Filter selector turned to "OFF"):
The filter function valve pilot solenoids shall be provided with manual operators to allow the valves to be positioned manually.

d. Removing a filter from service:
It shall be possible to remove a filter from service by turning the filter selector to "OFF" and placing the filter valve in the required position by use of the manual overrides on the solenoid pilots, providing the control air reserve is adequate.

4. Control Components

a. Backwash:
The duration of the backwash shall be adjustable from 0-30 minutes. The backwash rate shall be controlled by a manual rate set valve in the backwash water supply line in conjunction with a backwash rate of flow indicator.

b. Air wash:
Contacts shall be provided to operate the air wash blower in the proper sequence with the control system. The duration of the air wash shall be adjustable from 0-10 minutes. The air wash rate shall be controlled by blower sizing.

c. Indicator lights:
Pilot lights shall indicate both the service and backwash position of each unit.

d. Interlocks and safeties:
In the event of a power failure, the unit shall remain in the service position if the control air reserve is adequate. If the failure occurs during the backwash cycle, the valves shall return to the service position. On restoration of power, the unit shall return to the beginning of the cycle and continue to completion.

5. Backwash Control Panel:

a. The control panel shall be a NEMA 12 free standing control cabinet containing a programmable controller, a non-volatile memory module, and relays all shop wired to a marked terminal strip and tested before shipment. All relays shall be of the plug in type for easy servicing. Mounted on the front of the control panel shall be the timers, pilot lights, selector switch, and push buttons.

6. Compressor

a. Furnish one compressor pack consisting of two Quincy or equal, single stage automatic air compressors with one ASME code, horizontal receiver, motor, loadless starting, pressure gauge, safety valve, crankcase drain, blowdown, refrigeration type air dryer, trap with manual and automatic blowdown, shut off valve and compressed air filter with spare cartridge for dryer, ready for operation.

b. Compressor pack to be General Filter or equal, 5.0 cfm FAD at 80 psi and driven by a 1 hp, 208 volt, 3 phase, 60 Hz, drive motor.

J. Air Scour Blower

1. Air for the air scour shall be provided by a rotary, positive displacement blower designed to deliver 3 cubic feet per minute per square foot of filter area at a pressure of 5 psig. The blower shall be Roots or approved equal.

2. The blower shall be shop mounted on a base together with an open, dripproof, 208 volt, 3 phase, 60 Hz motor, V-belt drive, and drive guard.

3. Blower accessories shall consist of intake air filter, intake silencer, discharge silencer, pressure relief valve, check valve, intake and outlet flexible connections, and pressure gauge.

K. In-Bed Air Wash Grids

1. Provide an in-bed air wash distributor system for the filter cell to be placed at the interface between the supporting gravel bed and the filter media. The air wash grids shall be properly sized to provide even distribution of air throughout the entire filter bed when air is applied at a rate of 3 cfm/sq. ft. of bed area.

2. Each in-bed air wash grid system shall consist of rigid Sch. 40 PVC pipe headers and ¾" diameter Sch. 40 PVC laterals on 8" centers. Laterals shall be provided with air distribution orifices on 8" centers and fitted with ABS plastic media retaining distributors secured at orifice locations. Laterals shall be cut to proper length and have the distributors factory installed. The pipe headers shall be rigidly supported at points not exceeding 5'-0" centers.

L. Sampling Cocks

1. Sampling cocks shall be provided so that representative water samples may be secured at the following points:

a. Raw Water
b. Interface of anthracite and greensand media
c. Mid-point of manganese greensand bed

d. Bottom of manganese greensand bed
e. Filter Effluent
f. Plant Effluent

M. Painting

1. The interior and exterior of the filter tank shall be thoroughly cleaned of loose mill scale and grease. One shop coat of Sherwin Williams Corothane I GalvaPac Zinc primer shall be applied to the exterior before shipment. The interior shall be painted with one shop coat each of Sherwin Williams Corothane I GalvaPac Zinc primer and Sherwin Williams Dura-Plate 235 Multi-Purpose Epoxy finish.

N. Start-Up Services

1. The contractor shall furnish the services of a manufacturer's factory service person for final inspection and start-up of all electrical and mechanical equipment furnished by the manufacturer and to instruct owner and contractor's personnel in proper operation and maintenance procedures. A minimum of 1 (one) trip for a total of 1 (one) eight hour work day shall be required.

## 2.2 BOOSTER STATION AND DIAPHRAM TANK

A. Booster Station

1. The booster station shall consist of 1 (one) complete AquaForce duplex system, as manufactured by G&L Pumps, ITT Industries, or approved equal.

2. The booster station shall be complete, and consist of a flat steel base with supporting ribs, duplex multi-stage pumps, NEMA motors, NEMA 4 main fuse disconnect enclosure and lock out for each pump, G&L variable speed controller for each pump, ANSI flanged 304 stainless suction and discharge manifolds (schedule 40 minimum), liquid filled, bourdon tube pressure gauges on each manifold, isolation valves and non-slam check valves.

B. Pumps

1. The contractor shall provide 2 (two) multistage centrifugal pump units, Model SSV, as manufactured by G&L Pumps, ITT Industries, or equal. All pump units shall be from one manufacturer and provided complete including electric motor drive.

2. Conditions of Service

a. Equipment – 3SVB

b. Flange Diameter – 2” – suction and discharge

c. Primary Service Point – 30 GPM, 175 feet, 52% efficiency

d. Minimum shutoff head – 190 feet

e. Minimum flow – 11 GPM

f. Operating speed – 3500 RPM

g. Minimum Motor HP – 3

3. Each pump shall have the following features.

a. The pump casing shall be of deep drawn, laser welded AISI 304L stainless steel and shall be capable of withstanding maximum working pressures of 360 psi. Piping connections shall be in-line and shall be compatible with ANSI raised face flanges.

b. Wear rings shall be provided within each stage. Wear rings must be self centering and easily replaceable.

c. Impellers shall be of enclosed design and constructed of AISI 316L stainless steel. Impellers shall provide internal thrust balance in each stage.

d. Each stage shall have a bowl with attached diffuser and be constructed of AISI 304L or 316L stainless steel.

e. The seal housing shall be of concave design and shall hold the seal faces below the topmost part of the pump casing.

f. The pump shaft seal shall be High Temperature Carbon Rotary Face, Silicon Carbide, Graphite Filled Stationary Face and Viton or EPR Elastomer.

g. The pump shall have shaft sleeves made of Tungsten Carbide and ceramic bearings. Shaft height shall be set with a standard spacer.

4. The pump drive motor shall be NEMA standard design TC frame suitable for vertical mounting and close coupled to the pump unit. Motors shall be standard manufacturers catalog design and must not use special bearings as a thrust handling device. The motor rating shall be 3 HP, 3500 RPM, 3 phase, 60 Hz, 208 volts, TEFC enclosure, High Efficiency, 1l15 Service Factor.

5. Each pump shall be hydrostatically tested by the manufacturer in accordance with Hydraulic Institute Standards at a minimum of 350 PSI.

6. Production performance testing will be conducted by the manufacturer on each pump unit. Head at three operating points (70% of BEP, BEP, and 120% of BEP) will be measured to verify performance.

C. Pump Controls

1. Pump Controller

a. The pump controller shall be the Goulds AQUAVAR variable speed pump controller, or approved equal. The controller shall be directly coupled to a standard duty, NEMA design B or greater TEFC AC induction motor, class F or greater insulation. The controller shall provide an

adjustable carrier frequency with IGBT power switching, and short circuit and ground protection, and work with the controlled sinusoidal current syntheses and dynamic over current limitations. The controller shall be one complete unit including the variable frequency drive, programmable pump specific control logic, and include NEMA 4 enclosure. Additional control panels, PLC's, or other external devices, shall NOT be necessary to accomplish complete pump programming and variable speed control of pump and motor.

b. The pump controller shall provide an LCD two line display with 16 characters per line and programming keypad for data entry. Units shall utilize user-friendly front panel programming in three languages that displays pump and motor language in clear text. Three colored diodes shall signal 'power on', 'pump running', and 'fault'. Program settings shall be changeable and stored in non-volatile memory. Program settings shall be retained in memory in the event of loss of power to the controller, without the use of a backup battery. System operating pressure shall be clearly displayed in PSI or feet of head for ease of use and to provide an operator friendly interface.

c. The settings and program in whole or in part may be locked out with the use of an operator selectable password. Standard system hydraulic settings shall include at a minimum the following functions: loss of suction, lack of NPSHa, pump run-out protection, dead head protection, constant pressure setting with variable flow capability, constant flow with variable TDH capability, quadratic differential flow calculation, system curve compensation, multiple pump operation with alternation, pump starting point with allowable adjustable pressure drop, minimum speed with time delay, pressure of flow sensor error, overpressure shutdown and low flow shutdown.

2. Interface

a. The control board unit shall contain dry relay terminals which can be connected to external devices for operation of: remote start and stop, low-pressure protection switch, pump run relay, pump fault relay, analog output signal (0-10 Vdc) actual pressure, analog input (4-20 mA) sensor, secondary analog input (4-20 mA) offset signal, multipump interface via RS485, two pressure settings with one field programmable transducer.

b. The integrated microprocessor shall provide automatic start and stop for up to four variable speed controlled pumps, and enable automatic changeover for lead and lag pump sequencing, with the use of external devices or timers.

c. A stainless steel pressure transducer shall be included. All hardware and appropriate range transducer shall be provided by the pump control manufacturer to ensure complete compatibility with controller.

3. System Protection

a. The controller shall provide a programmable automatic error reset of the pump system that will provide up to five restarts, with a programmable time delay between each start. The pump controller shall provide a fault history with at least five previous faults codes. The pump controller shall provide for programmable automatic test run of pumps during periods of down time, based on frequency and operating hours. The pump controller shall incorporate motor thermal protection and drive temperature protection as standard equipment. The pump controller

shall be capable of monitoring and displaying total operating hours, and total motor run hours. The pump controller shall protect the variable frequency drive and motor from: overvoltage, undervoltage, phase loss, phase imbalance, motor overcurrent, ground falut and short circuit. The pump controller shall be UL listed.

4. System Installation and Integration

   a. A complete instruction, operation, and programming manual shall be provided by the authorized supplier. The instruction manual shall include a typical system design, installation instructions, programming instructions, and troubleshooting assistance.

   b. The variable speed control system shall include the following: variable frequency drive, microprocessor based PLC, pump specific control logic, pump, motor and transducer. The variable speed pump system and components shall be provided, installed and integrated by a single source entity.

   c. Complete system integration, setup, programming and warranty shall be the responsibility of the factory-authorized representative.

5. Field Tests

   a. A factory qualified service representative shall be present at initial startup of the system to ensure correct installation and rotation of the unit. Any deficiencies shall be noted and corrected prior to the commissioning of the unit. A minimum of 8 hours on-site service and training is required.

   b. In the presence of the Engineer, field-testing of all equipment shall be performed to determine that the operation is satisfactory and in compliance with these Specifications. Testing shall be completed after the installation is complete, the equipment has been operated and all necessary adjustments have been made.

   c. Each pump unit will be operated for a suitable period during which time all possible loads, where conditions permit, shall be applied. All tests shall be complete with clear water.

   d. During the field tests, readings for all the electrical data shall be recorded on approved log sheets and submitted to the Engineer.

D. Diaphragm Tank

1. As an integral part of the installation the contractor shall provide a diaphragm tank connected to the discharge line from the booster pump system, as shown on the plans.

2. The tank shall be a Goulds Hydro-Pro Model V45, or approved equal.

3. The tank shall have a deep drawn steel outer shell and a second inner shell. The tank shall include an inner polypropylene liner meeting FDA requirements, and a butyl rubber diaphragm separating the air and the water. The tank shall have a working pressure of 125 psi and a maximum operating temperature of 120 degrees F.

4. The tank will be pre-charged to 38 psi and the charge will be adjustable to meet system operating requirements.

## 2.3 CHEMICAL FEED SYSTEMS

A. The contractor shall provide and install 3 (three) complete chemical feed systems. Two of the systems will be for feeding solutions of sodium hypochlorite, and 1 (one) of the systems will be for feeding potassium permanganate solution. One of the sodium hypochlorite systems will feed solution to the raw well water prior to treatment in the Manganese Greensand Filter. The other sodium hypochlorite system will feed solution following the Manganese Greensand Filter before the treated water enters the Finished Water Storage Tank. The permanganate feed system will feed potassium permanganate solution before the well water enters the Manganese Greensand Filter.

B. The chemical feed systems shall be complete with all equipment necessary for a complete and operational system, and shall include: solution tanks with lids, strainers, foot valves, supply and delivery tubing, duplex diaphragm metering pumps for each system, and a mixer for the potassium permanganate system.

C. Metering Pumps

1. Metering pumps shall be positive-displacement type with an ABS pumping head.

2. Feed rate shall be adjustable over a 10:1 range up to 0.5 gph.

3. Metering pumps shall operate when the well pump is energized and water is flowing through the Manganese Greensand Filter.

4. Metering pumps shall operate to 125 degrees F.

5. Stroke length shall be manually adjustable to 0.

6. Metering pump motor shall be fan-cooled, brushless, shaded-pole induction type, 115 volts, single-phase, 60 Hz, 0.9 ampere. A thermal switch cuts off when coil temperature reaches the motor insulation rating, Class B.

7. Metering pumps shall be similar to Wallace & Tiernan, Model 94-100, or approved equal.

D. Solution Tanks

1. Solution tanks shall be 30 gallon capacity and be made of polyethylene or PVC.

2. Solution tanks shall be marked such that solution levels can be easily read and levels for solution mixing can be measured.

E. Mixer

1. The potassium permanganate solution tank shall be equipped with a mixer mounted to the lid of the tank. The mixer shall effectively keep the permanganate in solution.

2. The mixer shall be 1/20 Hp, 115 volt, 60 Hz, for AC power.

## 2.4 WELL PUMP AND ACCESSORIES

A. The contractor shall provide and install 1 (one) 60 Hz Standard Capacity, 4" Submersible Pump in the existing water supply well. Well pump shall be Goulds Pumps Model 18GS15, or approved equal.

B. The pump shall be capable of producing 15 gpm from the existing well at a total head of 280 feet.

C. Pump

1. The pump shall be operable continuously without damage and be field serviceable to like new condition with common tools and readily available spare parts.

2. Metal parts shall be AISI stainless steel and shall be corrosion resistant, not-toxic, and non-leaching.

3. Non-metallic parts shall be FDA compliant, and the pumps and motors shall comply with ANSI/NSF Std. 61.

4. Built in check valve shall be stainless steel and low compression, FDA compliant, BUNA rubber.

5. Shaft shall have hex design and the coupling shall be exposed for easy field alignment and to check rotation. Upper and Middle bearings shall be urethane.

D. Motor

1. Motor shall be of corrosion resistant stainless steel with a stainless steel splined shaft, and hermetically sealed windings. The motor lead assembly shall be replaceable.

2. Motor shall be UL 778 recognized.

E. Accessories

1. Well pump shall be installed using a pitless adapter. The adapter shall have a bronze body and a Buna-N O-ring. The adapter shall have a vertical position indicator and be factory tested to 250 psi. The adapter shall support the pump and connecting piping and fit the existing 6" well casing. The adapter shall be 1 ¼ " to match the connecting piping.

2. The well casing shall be fitted with a watertight well cap of heavy duty cast iron construction. The well cap shall include a 9/16" screened vent, a ¼" grounding lug, and a 1" NPT conduit connection. The cap shall be painted with non-toxic lead-free paint.

## 2.5 STANDBY POWER GENERATOR

A. The contractor shall provide and install a standby power generator capable of starting and operating the booster pumps, as shown on the drawings. The generator shall be equipped with an automatic transfer switch, which will start the generator on loss of power. The generator shall be capable of starting 1 (one) of the booster pumps at a time, and shall be capable of operating both pumps together along with their controls.

B. The generator system shall have the engine and generator close coupled and mounted via vibration isolators to a steel sub base.

C. The engine shall be water-cooled diesel, 4-stroke, direct injection, similar to Lister Petter, or approved equal. The engine shall include: 12 volt electric start, 45 Amp battery charging alternator, radiator, blower fan and guards, dry type paper element air filter, battery tray and cables, fully autostart ready control panel with hour meter and safety shutdowns for low oil pressure, overspeed, overcrank, and high water temperature, mainline circuit breaker, autostart ready.

D. The generator shall be 4-pole, brushless, with solid state Automatic Voltage Regulator and sealed lifetime bearing.

E. The generator shall be 3-phase, 60 Hz, and include automatic transfer switches.

F. The generator system shall be similar to Lister Petter Model GS12D, or approved equal.

G. A factory qualified service representative shall be present at initial startup of the system to ensure correct operation of the unit. Any deficiencies shall be noted and corrected prior to the commissioning of the unit. A minimum of 8 hours on-site service and training is required

## PART 3 - EXECUTION

### 3.1 INSTALLATION

A. The water treatment systems shall be installed in the space provided in the proposed Maintenance Building in general accordance with the Drawings.

B. The contractor shall provide and install all miscellaneous piping, fittings, and hardware necessary for complete and operational systems as shown on the Drawings and as noted in the Specifications.

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### 3.2 FIELD TESTING

A. Field testing shall be required as noted in the Specifications.

B. A factory trained representative for each system shall be present for the startup and initial operation and training of each system. The required minimum time on site shall be as noted in the Specifications.

**END OF SECTION**

***Fauquier County Northern Area***
***Community Park & Sports Complex***
***PRICE BREAKDOWN SCHEDULE, Addendum #2***
***Table 2.1***
***(To Be Submitted Within 24 Hours of Bid Date/Time)***

| *Item* | *Total* |
|---|---|
| ***GENERAL SITE WORK*** | **$** |
| 1 Site Mobilization and Clearing<br>Includes tree protection and temporary seed and mulch | $ |
| 2 Earthwork and Grading | $ |
| 3 Utilities<br>Includes Sanitary Sewer and Water Distribution System | $ |
| 4 Storm Water Management and Storm Sewer System<br>Includes dredging existing pond and construction of new pond | $ |
| 5 Conspan Structures<br>Includes stone facing | $ |
| 6 Water Tank and Treatment System<br>Includes connection to well | $ |
| 7 Sanitary Sewer Grinder Pum<br>Includes connection to Force Main and all incidentals | $ |
| 8 Main Access Road and Route 55 Improvements<br>Includes signing, access gates, required sleeving and guardrails | $ |
| 9 Other On-Site Roads and Parking Areas<br>Includes timber wheel stops, pavement markings, access gates, bollards and required sleeving | $ |
| 10 Overflow Parking Areas<br>Includes bollard and chain at overflow parking areas | $ |

| | |
|---|---|
| **TRAILS AND PEDESTRIAN BRIDGES** | **$** |
| 11 Asphalt Trails and Cooresponding Pedestrian Bridges | $ |
| 12 Wood Chip Trail and Cooresponding Pedestrian Bridges | $ |
| | |

| | |
|---|---|
| **ATHLETIC FIELD CONSTRUCTION** | **$** |
| 13 Football Field Construction (2)<br>Includes grading, soil mix, seeding and goal posts | $ |
| 13A Strip Drains for Football Fields | |
| 14 Softball Field Construction (2)<br>Includes grading, speciality soil mix, seeding fencing and backstop | $ |
| 14A Strip Drains for Softball Fields | |
| 15 Baseball Field Construction (2)<br>Includes grading, speciality soil mix, seeding, fencing and backstop | $ |
| 15A Strip Drains for Baseball Fields | |

| | |
|---|---|
| 16 Soccer Field Construction<br>Includes grading, soil mix, seeding and goal posts | $ |
| 16A Strip Drains for Soccer Fields | |
| 17 Volley Ball Courts and Horseshoe Pit | $ |
| 18 Complete Irrigation System<br>Includes all piping, valves, controler, pumps, etc. | $ |
| 19 Supplemental Softball Field Components<br>Includes bleachers, dugouts, batting cages, and score boards | $ |
| 20 Supplemental Baseball Field Components<br>Includes bleachers, dugouts, batting cages, and score boards | $ |

| *Item* | Total |
|---|---|
| **OTHER AMENITIES** | **$** |
| 21 Playgrounds and Fitness Area<br>Includes equipment, edging woodcarpet mulch, and signing | $ |
| 22 Site Furnishings<br>Includes all benches, bike racks, trash receptacles, and grills | $ |
| 23 Park Entry Sign<br>Includes sign and related lighting | $ |
| 24 Walls and Fencing<br>Includes stone wall, frontage rail fence and perimeter fencing | $ |
| 25 Disc Golf Course<br>Includes tee, signs, and targets | $ |

| | |
|---|---|
| **LANDSCAPING** | **$** |
| 26 Site Landscaping<br>Includes all plantings, soil mix, mulch, etc. | $ |
| 27 Mitigation Plantings | $ |

| | |
|---|---|
| **SITE LIGHTING** | **$** |
| 28 Site Lighting<br>Includes site and sports field electrical distribution system and site lighting | $ |
| 29 Sports Field Lighting<br>Includes sports field light poles, fixtures and controls | $ |

| *Item* | Total |
|---|---|
| **ARCHITECTURAL CONSTRUCTION** | **$** |
| 30 Entry Building<br>Includes adjacent paving and $35.00 / SF allowance for deck - deck and railing construction to be similar to that at Lake Pavillion | $ |
| 31 Concession / Restroom Complex near Softball Fields<br>Includes adjacent paving | $ |

| | |
|---|---|
| 32 Concession / Restroom Complex near Soccer Fields<br>Includes adjacent paving | $ |
| 33 Restroom Building<br>Includes adjacent paving | $ |
| 34 Small Pavillions<br>Includes adjacent paving | $ |
| 35 Large Pavillion | $ |
| 36 Major Pavillion | $ |
| 37 Lake Pavillion<br>Includes deck and railing | $ |
| 38 Amphitheater<br>Includes building, seating, fire ring, stone walls and steps, paving, vehicular access, and fencing | $ |
| 39 Maintenance Building<br>Includes outside storage areas, fencing and gates, dujpster area, access road and parking | $ |

| | |
|---|---|
| **BID TOTAL** | |
| **A. General Site Work, Trails and Pedestrian Bridges, Athletic Field Construction, Other Amenities, Landscaping, Site Lighting AND Architectural Construction** | **$** |

**OR**

| | |
|---|---|
| **B. General Site Work, Trails and Pedestrian Bridges, Athletic Field Construction, Other Amenities, Landscaping, and Site Lighting** | **$** |

**OR**

| | |
|---|---|
| **C. Architectural Construction** | **$** |

**Unit Prices**

Submit Unit Prices for All Erosion and Sediment Control Devices (list individual items and related costs below)

| *Item* | Unit Price |
|---|---|
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